

Claims

1. A method of identifying a drug candidate capable of removing peptide, oligopeptide, polypeptide or protein from fibril or aggregate, which comprises measuring, in the presence of a test compound, the concentration of a soluble peptide, a soluble oligopeptide, a soluble polypeptide or a soluble protein in an equilibrium state in a solvent.
- 10 2. The method of claim 1, wherein the drug candidate is used for the treatment of a disease caused by the aggregation of peptide, oligopeptide, polypeptide or protein.
- 15 3. The method of claim 1 or 2, wherein the disease is selected from the group consisting of Alzheimer's disease (AD), Parkinson's syndrome (PD), Huntington chorea, prion disease, Down's syndrome, Lewy body dementia, multiple system atrophy, Creutzfeldt-Jakob disease, Gerstmann-Sträussler syndrome, mad cow disease, spinobulbar muscular atrophy, spinocerebellar ataxia (SCA), dentatorubral-pallidoluysian atrophy (DRPLA), familial amyotrophic lateral sclerosis retinitis, FTDP-17, progressive supranuclear palsy, corticobasal degeneration, Pick disease, familial British dementia and familial dementia accompanying neuroserpin inclusion bodies.
- 25 4. The method of any of claims 1 to 3, wherein the fibril or aggregate was formed *in vitro*.
- 30 5. The method of any of claims 1 to 4, wherein the equilibrium state is achieved under ultrasonication.
6. The method of any of claims 1 to 5, wherein the ultrasonication is substantially unaccompanied by heat generation.

7. The method of any of claims 1 to 6, wherein the ultrasonication conditions include 5 repeats of a 30 second ultrasonication at 1 MHz, 2 W/cm², duty ratio 20% with a 10
5 second pause.

8. A method of identifying a drug candidate capable of removing β -amyloid (A β) from fibril or aggregate formed *in vitro*, which comprises measuring, in the presence of a test
10 compound, the concentration of soluble β -amyloid (A β) in an equilibrium state in a solvent.

9. The method of claim 8, wherein the fibril or aggregate consists of A β (1-40).

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10. The method of claim 8, wherein the fibril or aggregate consists of A β (1-42).

11. The method of any of claims 8 to 10, wherein the
20 equilibrium state is achieved under ultrasonication.

12. The method of any of claims 8 to 11, wherein the ultrasonication is substantially unaccompanied by heat generation.

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13. The method of any of claims 8 to 12, wherein the ultrasonication conditions include 5 repeats of a 30 second ultrasonication at 1 MHz, 2 W/cm², duty ratio 20% with a 10 second pause.

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14. A treatment method of a disease caused by aggregation of peptide, oligopeptide, polypeptide or protein, which comprises application of ultrasonication to a patient.

15. The method of claim 14, wherein the disease is selected from the group consisting of Alzheimer's disease, Parkinson's syndrome, Huntington chorea, prion disease, Down's syndrome, Lewy body dementia, multiple system atrophy, Creutzfeldt-Jakob
5 disease, Gerstmann-Sträussler syndrome, mad cow disease, spinobulbar muscular atrophy, spinocerebellar ataxia (SCA), dentatorubral-pallidoluysian atrophy (DRPLA), familial amyotrophic lateral sclerosis retinitis, FTDP-17, progressive supranuclear palsy, corticobasal degeneration, Pick disease,
10 familial British dementia and familial dementia accompanying neuroserpin inclusion bodies.

16. A dissolution promoter for removing peptide, oligopeptide, polypeptide or protein from fibril or aggregate, which
15 comprises, as an active ingredient, the compound obtained by the method described in any of claims 1 to 13.

17. A dissolution promoter for removing peptide, oligopeptide, polypeptide or protein from fibril or aggregate, which
20 comprises, as an active ingredient, at least one selected from the group consisting of ferric dehydroporphyrin IX, amphotericin B, myricetin, tannic acid, curcumin, azure B and basic blue 41.

25 18. A dissolution method comprising dissolving peptide, oligopeptide, polypeptide or protein from fibril or aggregate, by the use of the compound obtained by the method described in any of claims 1 to 13.

30 19. Use of the compound obtained by the method described in any of claims 1 to 13 for removing peptide, oligopeptide, polypeptide or protein from fibril or aggregate.

20. An apparatus for treating a disease caused by the

aggregation of peptide, oligopeptide, polypeptide or protein, which comprises a means for ultrasonicallyating an affected part to remove peptide, oligopeptide, polypeptide or protein from fibril or aggregate.

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21. A method of identifying a drug candidate capable of removing peptide, oligopeptide, polypeptide or protein from fibril or aggregate, which comprises measuring, in the presence of a test compound, the concentration of the soluble peptide, soluble oligopeptide, soluble polypeptide or soluble protein dissolved from fibril or aggregate in a solvent.